

MEDICAL GALVANISM.

An Introductory Lecture

DELIVERED TO

NURSES AND MASSEUSES,

AT THE

*SCHOOL OF ELECTRICITY AND MASSAGE IN CONNECTION WITH THE
WEST END HOSPITAL FOR DISEASES OF THE NERVOUS SYSTEM,
PARALYSIS AND EPILEPSY, WELBECK STREET, LONDON. W.*

BY

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1887.

PREFATORY NOTE.



I HAVE pleasure in consenting to a request that I will allow this Lecture to be published : for it may serve to direct public attention to a new and altogether suitable vocation for well nurtured and educated women.

H. T.

68 WIMPOLE STREET, LONDON, W.

February 1887.

MEDICAL GALVANISM.

An Introductory Lecture.

IN giving my first lecture and demonstration at our School, I propose to ask your indulgence while I make one or two introductory remarks.

It is a trite saying, but it is nevertheless true, that we are living in a time of transition.

Time was, and within living memory, when the physician considered himself as a sort of divinity (and not a minor one), and when he was regarded by the public pretty much as the Red Indian used to look upon his Medicine Man, or as the present African does upon his Fetish !

These things have gone by ! The wise Physician of to-day takes his patient almost into council with him. At any rate, he sometimes tells him what is the matter with him—*that is, if he knows ?* and he likes him to take an intelligent interest in his own progress.

There are some courses of treatment, life being

short, and patients many, which it is impossible for the Physician to always carry out himself, because of the time occupied, and they must of necessity be occasionally entrusted, under his supervision, to trained and practised nurses. Medical Galvanism is undoubtedly one : Massage, as undoubtedly another : Medical Gymnastics as undoubtedly a third : and it seems that the time has fully come when popular instruction upon these subjects should be given.

Hence the foundation of our School of Massage and Electricity.

We offer no apology for that foundation, nor do we rest satisfied by merely pleading as a justification that duty incumbent upon every member of our profession, especially those who enjoy the privilege of hospital practice—the duty of communicating to others the knowledge gained from our patients : a duty which, it has been well said, “continues to the end of our lives, and which can no more be thrown off than can the obligation of a crown or of inherited wealth.” In addition to this plea, we say that we could not, with due regard to our Hospital and to those associated with it, continue to go on as heretofore, hiding our light under a bushel, and content solely in our quiet work of healing the palsied and the lame. The treatment by Massage and Electricity—a treatment that we have assiduously studied and developed daily for many

years, both here and elsewhere (and we have had more than 60,000 attendances here)—is now being placarded as a novel remedy. Ladies of title write about it in popular journals, and people cry out, “Behold! Here is some new thing under the sun!” Surely, then, we could not longer remain silent, and allow our clothes to be stolen from us and worn by others; and I am proud that our Hospital has been the first hospital in this great metropolis—nay, in this great country—that has had the foresight and wisdom to open out so promising a career for those whose lot in life it is (as is the case with most of us) to work before we can eat; for I know no better, no more useful, no more honourable, and no more fairly remunerative calling for any one with some aptitude and some love for nursing (*but remember this is essential*) than that of a Masseuse or Electrician.

It was recently set forth in the leading medical paper that Massage and Medical Electricity should never be administered to patients by any others than legally qualified medical men. If the paper in question had contented itself by saying that these methods of treatment should only be administered when prescribed by medical men, I should have been in entire agreement with it; but the journalistic statement as quoted seems to me to have no justification.

A physician wrote to me the other day, that “the

great difficulty he found with regard to Medical Electricity was, that he could not afford the time to apply it himself; that when applied by others there was no certainty that his directions would be carried out correctly; and that the result under such circumstances had been so often unsatisfactory that he had given up prescribing it."

I submit that such a letter as this goes far to prove that our School has been founded none too early; but in support of this opinion I will give you two cases.

A paralysed child was brought here. It had been submitted to the torture of a magneto-electric machine—a thing with no means of graduating its power, extremely painful in application, and which never ought to be used at all—for twenty minutes five or six times daily for months. The child screamed at the sight of the instrument, and the mother said: "Yes, it always *did* scream; but the doctor said it was the only chance of cure, and it *must* be done." It will be a mercy, if this poor child's nervous system proves *not* to have been irretrievably damaged by such a cruel and utterly unjustifiable proceeding. The machine is shown in Fig. 1, which also illustrates in another respect "How not to do it!"

You will observe that the conductors are grasped one in each hand. This sort of thing can be seen

any day upon race-courses ; always, I think, on the pier at Brighton. As regards any benefit, you might as well affix one conductor to the knockèr of the house door and the other to the bell-pull, which could do no harm ; but applied to a patient, the proceeding is not free from danger.

A case has been reported, in which a man, suffering

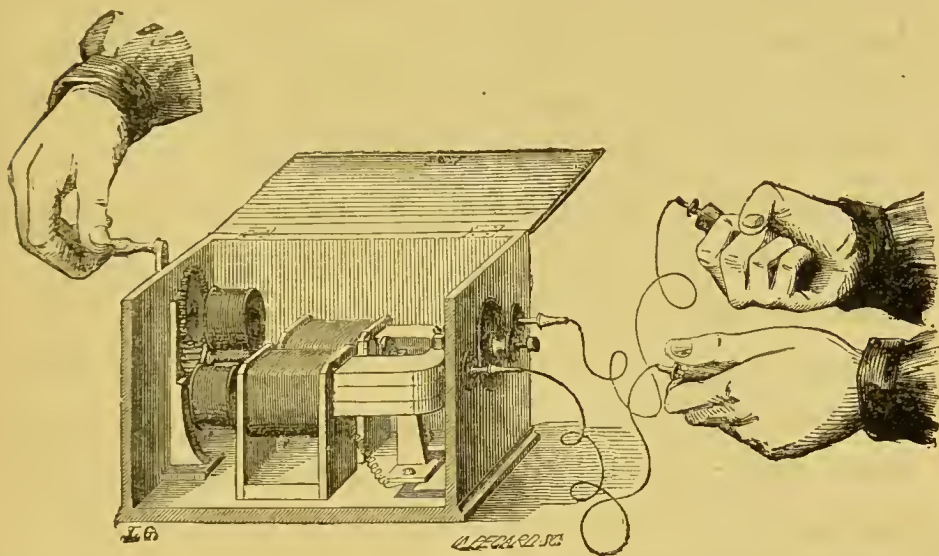


FIG. 1.—*The worst Machine, and the worst way of using it.*

from apoplexy, took the conductors in his hands, *and was unable to let them go !* The instrument he used was worked chemically ; no one else was in the room, and when after a time some one came in, the unfortunate man was found lying in convulsions upon the floor, stricken by another apoplectic seizure.*

* See Duchenne (De Boulogne) "*On Localized Electrization and its Applications to Pathology and Therapeutics*" (English Edition), p. 125. London : Churchill.

Not a single week passes without patients coming to this Hospital, and reporting that they have been instructed by their doctors to galvanize either themselves or their relatives in the way delineated in Fig. 1.

Yet one other case. A surgeon brought me a little girl, eight years old, whom he told me he had galvanized nearly every day for some three months. He brought the battery with him, and we proceeded to galvanize the child with it. She was a bright intelligent little woman; and she said "she was much better, and that she liked it."

I asked my friend to test the strength of the electricity upon his own face. His reply was: "Thank you; I would rather not." And, by the way, it is remarkable how ready some men are to apply painful electrization to their patients, and how exceedingly careful they are not to feel any of it themselves.

To cut the story short: we found that a connecting wire in the battery was broken; that no electricity reached the patient; and that the solemn farce of a solemn-looking doctor armed with a couple of wet sponges had been going on for months. But the little girl said she "was better." Although the *Vis Medicatrix Naturæ* is great, I could not but be reminded of the recent cartoon in *Punch*, of the street Arab lying in bed and having his temperature taken by a thermometer, and saying to the doctor who was

taking it: "Ah! sir, that's doing me a power of good, that is!"

Now, with reference to such cases as I have just quoted, men cannot be expected to understand what they have never been taught, and the responsibility for any want of necessary knowledge in medical practitioners rests upon their Medical School. Some fourteen or fifteen years ago, one of the largest Medical Schools in London sought my advice as to the best electrical apparatus for hospital use. I advised them to the best of my ability, but the matter was adjourned for several years, as the authorities would not expend more than £10!

It has recently been stated that "it takes at least two years to learn the art of massage, and that the masseuse *must* be an educated lady." With the first part of this statement I entirely disagree. If a student, man or woman, cannot become proficient in the application of both massage and electricity with six months' tuition and practice, he or she never will. With the second part I am in cordial agreement, and to the word "masseuse" I would add the words "or nurse-electrician." But we shall have to ask several questions during these demonstrations which will be easier to answer than the one I now put to you. What *is* an educated lady? I will not myself attempt an answer, but I will give you two quotations. One is from a certain play-writer, William Shakespeare

by name, and it assuredly applies to those who nurse the sick—"Sweet Mercy is Nobility's true badge." The other is by Sir Walter Scott. You all know it, but it will bear repeating :

" Woman, in our time of ease,
Uncertain, coy, and hard to please ;
When pain and anguish wring the brow,
Woman, a ministering angel thou."

I would substitute for the word "lady" the word "gentlewoman." On reference to my dictionary, I find that this latter word exactly describes the perfect masseuse or electrician : "a woman bland, mild, meek, soothing, peaceable, not rough or severe."

Should I ever personally require the aid of a masseuse, my hope is that I may secure such a one.

In this present course of Demonstrations I shall consider, firstly, so much of the science of electricity as is essential to medical practice, and then the construction of batteries and the way to keep them in order.

As electricity cannot be applied to a patient intelligently and profitably by "rule of thumb," you *must* possess a competent knowledge of the osseous, muscular, and nervous systems ; and so much as it is imperatively necessary to know I shall next endeavour to teach to you, the non-medical part of my audience ; and I feel sure that my medical friends who are

present will bear with me while I enter upon anatomical details with which they are familiar. I propose to illustrate these details by the aid of the very beautiful drawings and plates of the Department of Science and Art, South Kensington, and of Ellis and Ford. All the figures are drawn life size from actual dissections: and they are printed in colours with the object of making them as true pictures as possible of Nature. It was no part of my first intention to consider this subject, but in thinking out the best method of teaching you how to apply electricity—by which I mean how to apply it properly—I have been met by unforeseen difficulties. That some practical knowledge of the mechanism and movements of the body *must* be acquired I well knew; but I hoped that I should be able to recommend you some little book to efficiently help you to this knowledge. By the courtesy of several publishers I have looked into some twenty books, with the result that I find they all contain either much too little, or much too much; and I therefore feel compelled to do the best I can to impart the necessary knowledge to you myself. Even surface anatomy cannot be thoroughly learnt from description only; for some of our most distinguished artists have dissected the human body at a Medical School, and I wrote upon this matter, stating our difficulties, to the Secretary of the London School of Medicine for

Women ;* and that lady has kindly replied, that their customary Fee will be reduced for Students of Massage and Electricity who wish only to attend their Demonstrations, and look on at the work of their Dissecting Room. I strongly advise you to take advantage of this generous offer. After these anatomical details are disposed of, I shall consider the way to use electricity ; and afterwards the diseases which always require electrical treatment, and those which only occasionally do so ; and I shall conclude the Course by recapitulating the more important points ; and by grouping together such scraps of information about electrical matters as are calculated to help you, but which could not be conveniently considered under any special division of our subject.

I shall explain the methods of applying electricity by actual demonstrations on patients ; and after I have done so, I propose that, under my immediate supervision you shall each of you make the same applications which you will have seen me make, for theory is one thing and practice altogether another. Let us hope that we shall succeed in so combining the two that you will find that your attendance here will have been in every way time well and profitably spent.

Most of you are attending the Lectures and De-

* 30 Henrietta Street, Brunswick Square, London, W.C.

monstrations upon Massage given by my colleague, Dr. Stretch Dowse, and I feel assured that by becoming qualified in Massage, as well as in Electricity (and the two are almost always employed in conjunction or alternately), you will occupy a distinctly better position than those having knowledge only of one of these methods of treatment. In these hard times, let us glance for a moment at the £ s. d. aspect of a Masseuse alone, not to mention the combined Electrician and Masseuse. Lady John Manners, in a recent number of the *Nineteenth Century*, writes, that from a certain Institution in London the sum asked for a Masseur's daily attendance of one hour at a patient's house was £4 4s. per week; and that some wealthy families retain Masseuses as a part of their regular establishment. A patient of mine informs me that her Masseuse told her the other day that they gave a Dance, and drank four dozen Champagne at eighty-five shillings a dozen; and the Masseuse asked my patient "*Could she recommend her a Wine Merchant where good champagne could be bought cheaper?*" Against this, I will quote a bit of my own experience. At the request of a patient, I put an advertisement in the *Times*, seeking a lady as governess for two hours a day, three times a week—honorary for the week, ten shillings. I received 400 answers which I opened, and very many more; and I wrote to the *Times* about it, as proving the

difficulty educated, but otherwise untrained women, have in obtaining—I will not say remunerative, but *any* employment; and I may add that three of these ladies wrote that their husbands were tutors, and would be willing to attend upon the same terms. One lady was a widow, and a lady of title; and bad as things are, and hard as is the battle of life to every one, such a wholesale *exposé* of breaking hearts under decent clothing took away my appetite for dinner upon that day.

What is electricity? This is a question much more easily asked than answered. Faraday, undoubtedly the most profound electrician the world has ever seen, and who devoted a long life to its study, said that “he once thought he knew something about it; but he found that the more he investigated it the less he understood it.” It is one of what—for want of a better name—we call the “Physical Forces.” It is supposed that there are two different kinds of electricity, equal quantities of which neutralise each other, and that every substance in Nature—you and I included—contains these two kinds in equal quantities. By “*different kinds*” it is not meant that there is any *essential* difference between the two, for there is not; *but merely that they combine with and neutralize one another.* By suitable methods of procedure we can bring about their forcible separation, and render each kind manifest. When they are

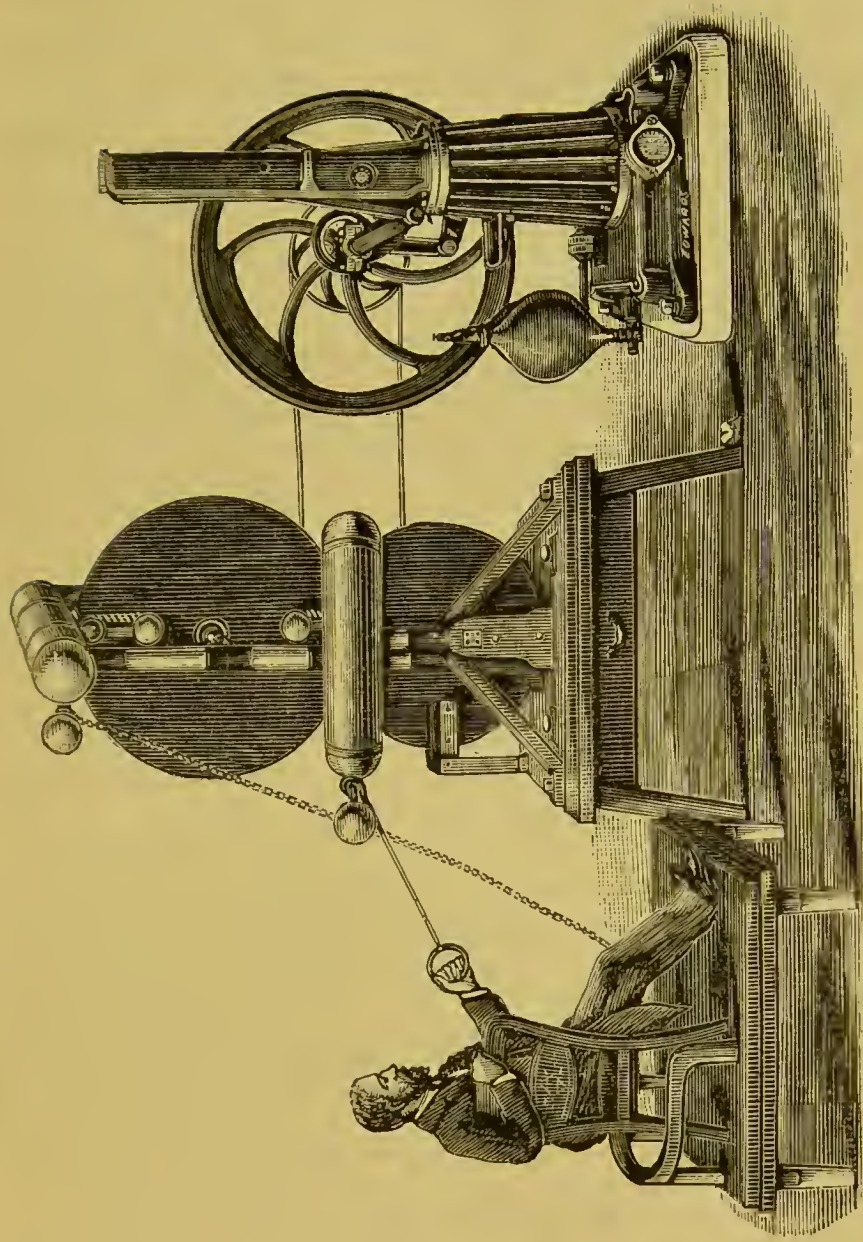
separated, the one kind is called "*positive*," the other "*negative*" electricity; but they will try very hard to unite again, and you will have great difficulty in preventing them. They have, each of them, the strongest inclination to diffuse themselves over any substance brought into contact with them in search of one another, for remember their separation was a forcible separation. We have heard of the loves of trees and plants. Does this feeling extend to positive and negative electricity? Their desire to meet is so strong that they will travel along a copper wire towards each other at the rate of two hundred and eighty thousand miles a second (quicker than light travels); and hence has been deduced the first great electrical law:—*Like electricities repel each other, unlike electricities attract each other*—that is, positive repels positive and attracts negative; and similarly, negative repels negative and attracts positive. This accommodating copper wire is therefore, and I think very properly, called a "conductor." Need I tell you that, as a matter of course, there are substances which will do all they can to prevent this reunion! Such substances are called "non-conductors" or "insulators;" and glass stands pre-eminently first, as from its coldness and smoothness it is entitled to do. When we wish to designate electricity as positive or negative, we do not write the words positive and negative, but we employ the

mathematical signs—plus (+) for positive electricity, minus (−) for negative; and it is hardly necessary to say that this notation is of great advantage, and being generally accepted, saves us much trouble.

We use three varieties of electricity—*not different kinds remember, but varieties only*:—1. The oldest known form, and that which arises when any two substances are rubbed together, and hence called “*friction* electricity,” and which is so conveniently generated by the rotation, by means of our Gas Engine, of a circular glass plate against a leather cushion or pad.* 2. The electricity of chemical action, the “continuous current,” so called, because the electricity *continues* to flow till the battery is exhausted. 3. The “induced current,” so called because it exists only when *induced* by the last-mentioned current.

There is unfortunately much confusion in electrical names. “Galvanism” is commonly applied quite indiscriminately to all varieties of electricity, and I am afraid it will continue to be so; but recently the three varieties have been named after the three distinguished men chiefly associated with them, and I strongly advise you to so call them, and thus help to clear away the present uncertainty; for now, three people may write letters about what they call “Galvanism,” and each of the three mean something different.

* See frontispiece.



Machine with Gas Engine and Insulating Stool; demonstrating the Method of Applying Static Electricity.

Friction electricity is called "*Franklinism*," after Franklin. You have all heard the story of the thunder-cloud, the kite, the key tied to the kite-string, Franklin's disappointment that he obtained no electricity; its coming on to rain, and by wetting the string making it a conductor; and his delight at being then able to draw sparks, real miniature flashes of lightning, from the key, with his knuckles!

The continuous current is called "*Voltaism*," as Volta discovered it.

The induced current "*Faradism*," as it was discovered by Faraday.

As I told you, Franklinism arises whenever two substances are rubbed together; but most substances are conductors, and as quickly as electricity is produced it runs away to the ground. To prevent its doing this and to "store it up," so to say, we must hit upon some means by which production is largely in excess of escape, and this is fully accomplished by having our storehouse built upon a non-conducting foundation. Our accumulators are our "store-houses"; and our insulating glass supports are their foundations. The electricity is rapidly stored up, and it cannot get away.

Voltaism is the result of chemical action. When two different metals are partially immersed in a liquid which is a good conductor of electricity, the two electricities (which you will recollect are always

present in combination in every substance, and therefore of course in these metals) become separated ; the positive electricity selects one metal and stops there ; the negative electricity, similarly, the other metal. The two metals and fluid are called a "*Galvanic Element*," also a "*Simple Galvanic Circuit*." The two metals, the fluid *not* included, are called the "*Poles*"—that upon which the positive electricity has stored itself, the positive pole ; the other, the negative pole. When the two poles are connected by a conductor the circuit is said to be "*Closed*"; when not so connected it is said to be "*Open*." When it is "closed" the electricities pass through the conductor and reunite. If you make yourself a part of this conductor, the electricities pass through you. This movement of the electricities is called the "*Galvanic Current*." Every electric current is, properly speaking, a double current : positive electricity flows in one direction, negative electricity in the opposite direction ; but for the sake of clearness and brevity the positive current is designated simply as "*the current*," if the direction of the current is spoken of, it being always understood that an opposite current, the negative one, exists simultaneously. Thus, in a carbon-zinc couple we should say *the current flows from the carbon pole through the connecting wire to the zinc pole* ; or, in other words, positive electricity flows from the carbon through the connecting wire to the zinc ; and negative electricity flows from the zinc through the connecting

wire to the copper. Of course the fluid and metals must be contained in a jar or vessel of some sort, and the jar *with its contents* is called a "*Cell*." When two elements are so arranged that the zinc of one element is in conducting connection with the copper or carbon of the other, twice as great an effect is produced as by a single element ; and so on with *any* number of

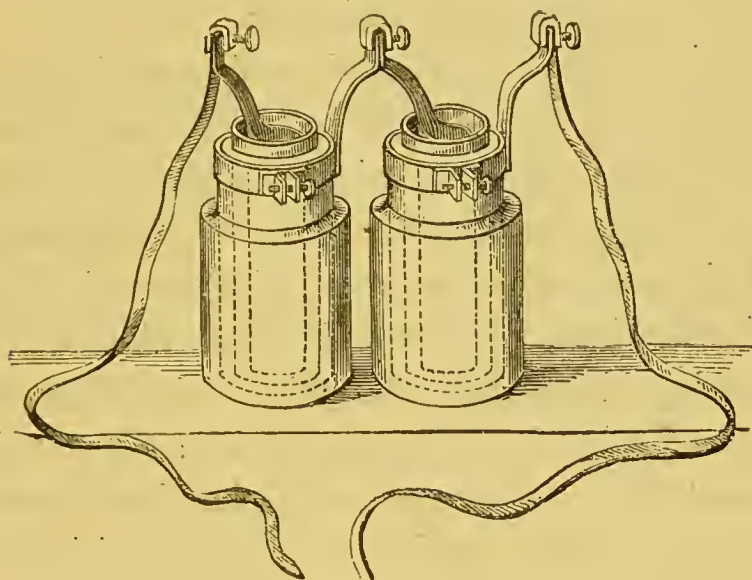


FIG. 2.—A Battery of Two Cells.

elements. The two or more elements thus united constitute a "*Battery*"; but the word "*Battery*," like the word "*Galvanism*," is loosely used, sometimes meaning a single cell, and sometimes many. As in any battery the pole of one element is in connection with the opposite pole of the next, the terminal poles are the only free poles, and they are called the "*Poles of the Battery*."

In Fig. 2 a Battery of two cells is shown. You will observe the “Elements”—viz., the fluid and the two metals; the “Cell”—viz., the fluid, the two metals, and the earthenware vessel; and the “Battery”—viz., the two cells with their free poles. This is all. This very simple arrangement has gone far to revolutionise the world. *At any rate, it has given us electro-plated spoons and bad half-crowns instead of silver, together with telegrams and other nuisances.*

As the power of a battery depends upon the number of its cells, it ranges from a degree so weak that a delicately adjusted testing instrument may be needed to prove its existence, to a degree so great that care and circumspection are required to avoid danger. As illustrations, I may mention that when the first Atlantic cable was completed, Sir Charles Wheatstone borrowed a lady's thimble as the cell: the contained elements were a needle and a pin, the connecting wire was the sewing thread, and the exciting fluid a pinch of salt and a few drops of water. With the aid of this small battery he sent a telegram to America. On the other hand, in the early days of electric lighting more than one unfortunate workman came to an instantaneous death, owing to some fault in the machinery by which the current was passed through his body. Of course these batteries were infinitely more powerful than any we use; but in medical practice accidents have happened: one

of the most eminent physicians in Europe permanently blinded a patient by suddenly applying a powerful current to his face ; and we must therefore never allow familiarity with electricity to breed contempt, but always remember that we are using a power which, though potent for good, may become potent also for evil.

Faradism differs altogether from the Voltaic current, and you will therefore not be surprised to learn that they cannot be used interchangeably as if they were identical remedies. Faraday found that if two wires were stretched side by side, but not touching, and if he then transmitted a current of Voltaic electricity through one of them, that a momentary current appeared in the other, *but only for a moment* ; but upon the discontinuance of the current in the first wire this momentary current re-appeared again in the second wire, but in a reverse direction. This is why Faradism is sometimes called the “secondary current,” because it arises in the second wire. Please then remember the fundamental distinction between the so-called Voltaic and Faradaic currents ; that the Voltaic “*Current*” is really what it is called—viz. a continuous current, or stream of constantly flowing electricity ; but, on the other hand, the Faradaic current is misnamed, for it is not a current at all, but a series of *shocks* of electricity, repeated many times in

a second, and passing alternately in reverse directions.

And now, having discussed these very technical and uninteresting, but essential details, let us shortly consider our work.

Regarded as a remedy, Medical Electricity is of great value in a wide margin of disease, and recent improvements in electrical apparatus enable treatment to be conducted with a degree of precision and success utterly impossible with old and imperfect instruments. *But it is solely by its careful and skilful administration* that electricity will do good and not harm. We all know the tendency of “new brooms,” and I have no hesitation in saying that in the great majority of cases, the application has been both too long and too strong. Electricity will either stimulate or soothe, according to its variety and mode of administration, but we almost always require—not its power of giving “shocks”—but its very remarkable restorative and refreshing effects. It will frequently restore a measure of power to the paralysed, and relieve—sometimes as if by enchantment—severe and long-standing pain. It should always be employed when the organism from any cause has become enfeebled, as in the general weakness of old age, in fatigue diseases, in loss of functional power, in certain uterine irregularities, in conditions of debility following acute diseases, in cases of general prostration from over

work or anxiety, in all functional diseases of the throat, in sleeplessness, in asthma, in certain cases of melancholia, in cases of gout and rheumatism, and in all cases of neuralgia (such as sciatica), or other painful conditions.

In conclusion :—Are you as Nurses, Electricians, and Masseuses entering upon a good and useful work—a work which will not only return you that “hire” of which we are told in Holy Writ the labourer is always worthy, but that far better recompense—the enduring gratitude of your patient?

I say emphatically, Yes.

And is there any greater pleasure than is experienced when having earned such thanks, they are freely and cordially given?

If you qualify yourselves, by not only attending our Lectures, but by what is of infinitely greater importance, diligent and hard work in our Hospital Electrical and Out-Patient Rooms, you will become expert in the many details and manipulations of what may, not inaptly, be called our “*Advanced School of Electricity and Massage*,” and your “Certificate of Qualification” will be regarded by the public as a guarantee of your possessing the highest available skill in these Sister Arts; and by the Medical Profession as a testimony that a new class has arisen, as superior to the so-called electrician and shampooer as is the hospital-trained

nurse of to-day to the "Sarah Gamp" of the bad old time ! *

* Whatever may have once been the ease, the good workman is now recognised, not by his using few, but by his using many tools. We know, of course, that "*of drinking of physic there is no end*;" and, in these high-pressure times, it may be said of it that in skilful hands, it often works marvels !

We, as Specialists, have to do with a special class of diseases—those of the Nervous System ; and when our patients come to us, they have generally drank medicine *ad nauseam*, and seek other remedies.

Of Electricity I will say no more ; but she has two Hand Maidens—Massage and Medical Gymnastics—both of great importance.

Massage has been defined by my colleague, Dr. Stretch Dowse, to consist of "Modes of manipulation, of every possible variety, of Finger, Hand, Knuckle, Wrist, and even Arm movements. These vary considerably in their nature, and differ entirely from ordinary Shampooing. They may be summarized as a series of Rubbings, Pinchings, Strokings, Slappings, Shakings, and Kneadings. They are classified by our Continental friends as '*Effleurage*,' '*Massage à Friction*,' '*Petrissage*,' and '*Tapotement*.' "

In various diseases of the Nervous System the daily practice of regulated Gymnastic Exercises is of the very first importance. This is especially so in many forms of paralysis. In these latter cases, when ANY amount of voluntary power has been restored by electricity or otherwise, it is imperative that the patient should be encouraged to *use* the limb or part ; and there is often the very greatest difficulty in getting the patient to even try to do this.

If unable to do so, the natural movements of the part should be imitated by what are called "passive movements"—that is, by a nurse grasping and "working" the limb as nearly as possible after Nature. For example, if the muscles which extend or open the hand or fingers are paralyzed, and the hand remains obstinately shut, or if the forearm is rigidly bent at the elbow, the hand and fingers should be opened by the nurse, and the elbow should be straightened at intervals of a few seconds, and this continued for some fifteen minutes, *with due discretion as to the power used*. So on with other paralyzed muscles.

Those who have gained a measure of power, however small, should also call gymnastic apparatus to their aid, upon which they should daily exercise their weakened muscles.

The Imperative Rule is—“*Exercise short of fatigue ;*” and this is most important.

Patients, in their anxiety to get well, are so given to overdoing every treatment left to them ; *and this is why they should always call in their customary medical attendant to supervise their exercises.*

Patients “rush in where physicians fear to tread !”

With regard to Gymnastic Apparatus, the old system of elastic “extenders,” or “bands,” should never be used, but a system of graduated weights.

The following figures illustrate useful movements :—

Fig. 3 shows a movement especially applicable to strengthen the arms and chest.

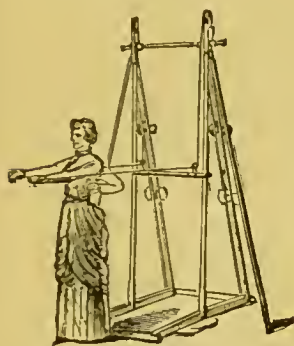


Fig. 3.

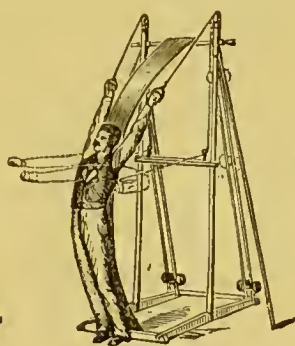


Fig. 4.

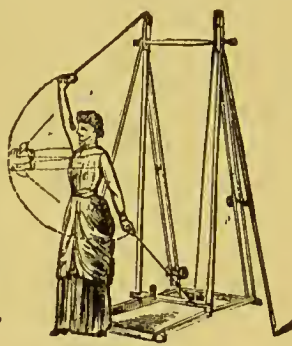


Fig. 5.

Fig. 4, one for strengthening the muscles of the neck, back, and abdomen.

Fig. 5, a special movement appropriate for curvature of the spine, &c. &c.

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